



15796



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Sc.(MLT)-2022/B.Sc.(MLT)-2023

Course Name – Health Informatics

Course Code - BMLTE504B

(Semester V)

Library
Brainware University
398, Ramkrishnapur Road, Barasat
Kolkata, West Bengal-700125

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Interpret what the E-value in BLAST represents.
- a) The total number of aligned nucleotides. b) The probability that the alignment occurred by chance.
- c) The sequence identity percentage. d) The number of query sequences.
- (ii) Classify BLASTn and BLASTp based on their use.
- a) BLASTn is used for protein comparison, and BLASTp is for nucleotide comparison. b) BLASTn is for nucleotide comparison, and BLASTp is for protein comparison.
- c) Both BLASTn and BLASTp compare protein sequences. d) Both BLASTn and BLASTp compare nucleotide sequences.
- (iii) Describe how BLAST helps in gene function prediction.
- a) It translates DNA sequences. b) It calculates protein structure.
- c) It measures the length of the sequences. d) It compares sequences to identify homologs, which may share functions.
- (iv) Demonstrate the effect of database size on BLAST results. How does it affect the E-value.
- a) A larger database size increases the E-value. b) A larger database size decreases the E-value.
- c) Database size has no effect on the E-value. d) The E-value remains constant regardless of the database size.
- (v) Classify the types of interactions that stabilize tertiary structure.
- a) Peptide bonds only. b) Hydrogen bonds, ionic bonds, and hydrophobic interactions.
- c) Only hydrophobic interactions. d) Disulfide bonds and peptide bonds.
- (vi) Select- Patient-reported data can include:
- a) Billing information. b) Clinical trial results.
- c) Symptom diaries. d) Appointment schedules.

10. Define flowchart, decision tree, and algorithm and explain primary differences in structure and purpose. (5)
11. A busy hospital lab receives blood samples for Complete Blood Count (CBC). Some samples are hemolyzed, some unlabeled, some delayed >2 hours. Design a detailed flowchart (with decision diamonds) for the specimen reception to CBC report process that includes: patient ID check, labeling, anticoagulant check, sample acceptance/rejection, centrifugation, analysis, QC checks, and reporting. (5)
12. Classify different data measurement scale used in health informatics. (5)

OR

Classify different types of data used in clinical research. (5)

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